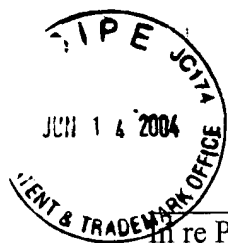


IFW
AR/3929



Docket No.: 20135-00315-US
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
James W. Heater et al.

Application No.: 09/619,701

Confirmation No.: 1770

Filed: July 19, 2000

Art Unit: 3729

For: UNIVERSAL TOOL FOR UNIFORMLY
APPLYING A FORCE TO A PLURALITY OF
COMPONENTS ON A CIRCUIT BOARD

Examiner: A. D. Tugbang

RESPONSE TO NON-COMPLIANCE WITH 37 CFR 1.192(C)

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450


Dear Sir:

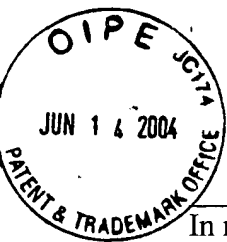
In response to the Notice of Non-Compliance With 37 C.F.R. § 1.192(c), the undersigned include three (3) substitute copies of an Appeal Brief.

The Commissioner is authorized to charge in fees necessary with respect to this communication to Deposit Account No. 22-0185.

Dated: June 14, 2004

Respectfully submitted,

By: 
George R. Pettit, Reg. No. 27,369
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicant



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**SUBSTITUTE
BRIEF ON APPEAL**

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on
October 29, 2003.

The fees required under § 1.17(f) and any required petition for extension of time for filing
this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL
BRIEF.

This brief is transmitted in triplicate.

This brief contains items under the following headings as required by 37 C.F.R. § 1.192
and M.P.E.P. § 1206:

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is the International Business Machines Corporation, Assignee of the application.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to the Appellants' legal representatives which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-4 and 11-15 are pending in the application.

Claim 5-10 have been canceled.

Claims 1-4 are withdrawn from consideration.

Claims 11-15 stand rejected and are on appeal.

IV. STATUS OF AMENDMENTS

No amendments have been filed after the Final Rejection.

V. SUMMARY OF INVENTION

The present invention relates to a method for applying a bonding pressure to circuit board components. In particular, the method is used to bond heat sinks to electrical components. An adhesive which has a good heat transfer characteristic is used to bond the heat sink to a circuit board component. During the process of bonding the heat sink to the component, the adhesive material is applied to the component and an amount of uniform pressure is applied to the heat sink to establish a high strength bond with the component (specification, pg. 5, lines 23-28).

In most applications, a plurality of such heat sinks are bonded to a plurality of components of the circuit board. Fig. 1 illustrates a circuit board 5 having such components, where a heat sink is to be bonded thereto using the method. First, second and third pressure cylinders 11, 12 and 13 are supported over the board along first and second axes (specification, pg. 4, lines 9-10). Each of the pressure cylinders have a foot 13A (shown in Fig. 2) which engages with the heat sink 4 and forces the heat sink into contact with a circuit board contact via an adhesive 2. The force is applied simultaneously to all of the pressure cylinders, and the feet of the pressure cylinders extends simultaneously to extend a force against the components for a duration of time sufficient to allow an adhesive coated component to bond to the circuit board (specification, pg. 8, lines 11-17 and pg. 5, line 28 - pg. 6 line 8).

Following the predetermined time, the feet 13A are retracted and a new board may be placed in the tool and the process may be repeated.

VI. ISSUES

The issues presented on appeal are:

1. Whether claims 11-15 are unpatentable under 35 U.S.C. § 112;
2. Whether claims 11-15 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by Lape, (U.S. Patent No. 5,093,984) and;
3. Whether claims 11-15 are unpatentable under 35 U.S.C. § 103 over Lape in view of Harada (U.S. Patent No. 4,675,993).

VII. GROUPING OF CLAIMS

Claims 11-13 and 15 stand and fall together. Claim 14 stands and falls alone.

VIII. ARGUMENTS

The Rejection of Claims 11-15 Under 35 U.S.C. § 112 Is In Error

Claim 11 has been rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellants regard as the invention.¹ In accordance with the final rejection page, 2,

In claim 11, recitation of "adhesive coated component" (line 8) is unclear. If this is referring to the previous recitation of "components" (line 3), how many groups of components are there?

The claim as written refers to a method for applying a bonding pressure to circuit board components bonded to a circuit board. Each recitation of the term "components" throughout the claim, including those in lines 3 and 8 of claim 11, refers to this process where components are bonded to a circuit board. Accordingly, there is only one set of components and the claim is believed to be clear on this point. While a plurality of components are recited in the preamble of the claim, it is clear from the language of the claim that first, second and third pressure cylinders positioned over components on the board have a single foot which can be extended against a single component underneath the cylinder.

The required clarity and precision under 35 U.S.C. § 112, second paragraph, is stated more succinctly in MPEP Section 2173.02. That section of the MPEP requires the following:

When the Examiner is satisfied that patentable subject matter is disclosed, and it is apparent to the Examiner that the claims are directed to such patentable subject matter, he or she should allow claims which define the patentable subject matter with a reasonable degree of particular clarity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted. Even though the claim language is not as precise as the Examiner might desire. Examiners are encouraged to suggest claim language to Applicants to improve the clarity or precision of the language used, but should not reject claims or insist on their own preferences if other modes of expression selected by the Applicants satisfy the statutory requirement. MPEP 2173.02

¹ The undersigned repeats his offer made in the Final Rejection to amend the claim in a way which the Examiner considers appropriate.

It is considered that the claims as written satisfy this obligation. As to the answer of how many groups of components are there, the claim only specifies a plurality and there should be no confusion by referring to one component of the plurality.

The rejection of claims 11-15 Under 35 U.S.C. § 102(b) As Being Anticipated By Lape (U.S. Patent 5,093,984) Is In Error

To anticipate a claim, the reference must teach every element of the claim. A claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). MPEP § 2131.01

The Lape reference fails to meet the requirements of an anticipating reference. The Final Rejection alleges that:

Lape discloses the claim method comprising....each of pressure cylinders having a footpad (pad portion 260) which extends under air pressure against the components; and supplying a source of pressurized air simultaneously to the pressure cylinders (shown in Fig. 18) whereby feet (pad portion 260) of the pressure cylinders extend simultaneously to apply a force against the components. (See col. 11, lines 2 + and col. 14, line 59+).

The foregoing assertion, that Lape shows pressure cylinders having a foot pad (pad portion 260) which extends under air pressure against the components, is in error. Pad portion 260 comprise a vacuum tip which is disclosed in col. 20 of the patent, lines 57-64 for capturing the circuit device resting free in the socket base 11. Thus, when the component is removed from the socket, the vacuum tip is brought into place and lifted free of the socket after the socket spring bias has been removed to free the component from the socket.

This structure does not anticipate that portion of claim 11, which requires:

Supporting first, second and third pressure cylinders over components on said circuit board...each of said pressure cylinders having a foot which extends under pressure against said components; and supplying a source of pressurized air simultaneously to said pressure cylinders whereby feet of said pressure cylinder simultaneously extend to apply a force against said components for a duration of time sufficient to bond an adhesive coated component to said circuit board.

The Lape reference is directed to the system for loading and unloading circuit components to a burn in test fixture. Components are loaded on a tray which are individually loaded into sockets for burn in. The alleged structure of Lape which allegedly corresponds to the pressure cylinders having feet of claim 11 is in fact a cylinder head for forcing socket contacts open, not for applying a force against the component so that it can be bonded to any part of a circuit board.

The Rejection of Claims 11-15 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Lape In View of Harada (U.S. Patent 4,675,993) Is In Error

As was noted with respect to Lape, Harada also fails to disclose any system for applying pressure from feet of a pressure cylinder to a component being mounted on a circuit board. Harada, is directed to a pick and place system where a vacuum suction head locates an electronic component on a circuit board. These systems select components for placement, and pick up the component through a vacuum suction head. The mounting head carries the component over the location where it is to be placed, and then it is positioned on the circuit board. In reviewing Harada, there does not appear to be any ability to apply pressure to a component so that a bonding force is realized between the component on a surface to which the chip is mounted. Since neither reference discloses any extendible foot, from a pressure cylinder, which can apply pressure to a component being bonded to a surface, it is not seen how they can be combined in any way to suggest the subject matter of claim 11.

To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging in patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496, (CCPA 1970). MPEP 2143.03. Accordingly, the foregoing rejection fails to disclose the features of claim 11, even with the two references combined as proposed and fails to make a *prima facie* case of obviousness. Further, as set forth in the aforesaid MPEP section, if an independent claim is not obvious under 35 U.S.C. § 103, then any claim depending therefrom is not obvious.

Claim 14 is dependent on claim 11, and specifically calls for a timed pulse of air, to apply a pressure to the components for a fixed duration of time. It is not clear from the references, (which as noted above fail to supply any bonding force to a component) where there is any timed pulse of air produced for this or any other purpose. Accordingly, claim 14 is believed to be independently allowable.

Claim 15 also requires that the pulse of air be regulated which is not evident from the cited references.

IX. SUMMARY

The foregoing demonstrates that the rejected claims contain limitations which were not shown or disclosed in either of the cited references. Neither Lape nor Harada illustrates the use of piston devices, having extending feet which apply pressure to a component which is being adhesively bonded to a circuit board. Given the fact that neither reference has such structure, neither reference either individually or combined can anticipate under 35 U.S.C. § 102 or render obvious under 35 U.S.C. § 103 the subject matter. The Honorable Board of Patent Appeals and Interferences is, therefore, requested to reverse the final rejection.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 09-0457, under Order No. 20135-00315-US from which the undersigned is authorized to draw.

Dated: 6/14/04

Respectfully submitted,

By 

George R. Pettit, Reg. No. 27,369
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425
(202) 331-7111
(202) 293-6229 (Fax)
Attorneys for Applicant

APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/619,701

11. (Previously Amended) A method for applying a bonding pressure to circuit board components being bonded to a circuit board comprising:

supporting first, second and third pressure cylinders over components on said circuit board along one of first and second axes, each of said pressure cylinders having foot which extends under air pressure against said components; and

supplying a source of pressurized air simultaneously to said pressure cylinders whereby feet of said pressure cylinders simultaneously extends to apply a force against said components for a duration of time sufficient to bond an adhesive coated component to said circuit board.

12. (Previously added) The method for applying pressure to said pressure cylinders according to claim 11 wherein said step of supporting includes a step of positioning said pressure cylinders along said first and second axes to align said cylinder feet with a respective component on said circuit board.

13. (Previously added) The method for applying a pressure to said pressure cylinders according to claim 12 wherein said positioning step includes positioning arms for supporting said pressure cylinder along channels which are located along said axes.

14. (Previously added) The method according to claim 11 wherein said pressurized air is supplied as a timed pulse wherein said pressure is applied to said components for a fixed duration of time.

15. (Previously added) The method according to claim 11 wherein said step of supplying said timed pulse of pressurized air includes regulating the time pulse of air.